

ABSTRACT OF THE INVENTION

High purity silicon oxyfluoride glass suitable for use as a photomask substrates for photolithography applications in the VUV wavelength region below 190 nm is disclosed with the silicon oxyfluoride glass having a preferred fluorine content < 0.5 weight percent. The inventive silicon oxyfluoride glass is transmissive at wavelengths around 157 nm, making it particularly useful as a photomask substrate at the 157 nm wavelength region. The inventive photomask substrate is a "dry," silicon oxyfluoride glass which exhibits very high transmittance in the vacuum ultraviolet (VUV) wavelength region while maintaining the excellent thermal and physical properties generally associated with high purity fused silica. In addition to containing fluorine and having little or no OH content, the inventive silicon oxyfluoride glass suitable for use as a photomask substrate at 157 nm is also characterized by having less than 1×10^{17} molecules/cm³ of molecular hydrogen and low chlorine levels.